



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,921	03/19/2004	Mun Cheol Park	123034-05004821	6723

22429 7590 10/09/2007  
LOWE HAUPTMAN HAM & BERNER, LLP  
1700 DIAGONAL ROAD  
SUITE 300  
ALEXANDRIA, VA 22314

EXAMINER
----------

CULBERT, ROBERTS P

ART UNIT	PAPER NUMBER
----------	--------------

1792

MAIL DATE	DELIVERY MODE
-----------	---------------

10/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/803,921	<b>Applicant(s)</b> PAEK ET AL.	
	<b>Examiner</b> Roberts Culbert	<b>Art Unit</b> 1763	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 3/19/04 - 8/2/07.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-13 is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                  |                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                      | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                             | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/19/04</u> . | 6) <input type="checkbox"/> Other: _____                                                |

Art Unit: 1763

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000348393 A to Kawasaki in view of U.S. Patent 5,676,851 to Inul et al.**

Regarding claim 1, Kawasaki teaches (Figures 1A-1H) a method of manufacturing a stamper, comprising the steps of: forming a predetermined grating pattern of a metallic thin layer (11) on a substrate (5); forming a negative pattern having an inverse image to the grating pattern, by etching an exposed part of the substrate with a predetermined depth; (Paragraph 17) completing an embossing master having the negative pattern thereon, by removing the metallic pattern; forming a metal stamper layer with a predetermined thickness on a whole surfaces of the embossing master (Paragraph 18); so that the negative pattern is completely buried; and completing a stamper by separating the metal stamper layer from the embossing master, the stamper having a grating pattern of an inverse image to the negative pattern thereon.

Kawasaki does not expressly teach the use of an adhesion layer to form the metal stamper. However, the step is notoriously old and well known in the lithographic arts. For example, Inul et al. teach that a metal adhesion layer may be used to form a metal stamper layer on a quartz embossing master. It would have been obvious to one of ordinary skill in the art to use the conventional adhesion layer in forming the metal stamper of Kawasaki. Similarly, it would have been obvious to one of ordinary skill in the art to use the metal patterning of Kawasaki the method of Inul et al. in order to increase precision and density for optical disk.

Art Unit: 1763

Regarding Claim 2, the substrate is etched by a thickness of a grating pattern to be formed, in order to form the negative pattern.

Regarding the limitation of forming the stamper "for a focusing grating coupler" the limitation reads broadly on an intended use of the invention.

Regarding Claim 3, Inul et al. teach the anti-adhesion layer is formed with a metal.

Regarding Claim 4, Kawasaki teach the stamper layer (16) is formed with a metal.

***Allowable Subject Matter***

**Claims 5-13 are allowed.**

The following is an examiner's statement of reasons for allowance: The Prior Art of record fails to teach or render obvious a method of manufacturing a focusing grating coupler using a stamper, comprising the steps of: sequentially forming a clad buffer layer, a core layer, a grating layer, and a polymer layer; disposing a stamper on the polymer layer, the stamper having a negative pattern thereon; forming a grating pattern having an inverse image to a grating pattern of the stamper, by pressing the stamper in the polymer layer; removing the stamper; and forming a focusing grating coupler composed of the grating layer on the core layer, by anisotropically etching the polymer layer and the grating layer, wherein the stamper is fabricated by the steps of: forming a predetermined grating pattern of a metallic thin layer on a substrate; forming a negative pattern having an inverse image to the grating pattern, by etching an exposed part of the substrate with a predetermined depth; completing a metallic pattern master having the negative pattern thereon, by removing the metallic pattern; forming an anti-adhesion layer on a whole surfaces of the embossing master; forming a stamper layer with a predetermined thickness on the anti-adhesion layer so that the negative pattern is completely buried; and completing a stamper by separating the stamper layer from the embossing master, the stamper having a grating pattern of an inverse image to the negative pattern thereon as recited in independent claim 5.

The following prior art is considered pertinent to applicant's disclosure. U.S. Patent 7,050,674 to Lee et al. teaches forming a polymeric optic waveguide grating using a quartz stamper.

Art Unit: 1763

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



R. Culbert  
Examiner  
Art unit 1763